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Somatic chromosomes in Vicia.—For several years the structure of chromatin has received intensive study at the laboratory in Louvain, and numerous papers have been published by GRÉGOIRE and his pupils. A recent paper by SHARP[38] deals with the somatic chromosomes of *Vicia Faba*. The most important feature of this paper is the investigation of the resting nucleus and very early prophase. Even those investigators who believe in the individuality of the chromosome generally admit that they cannot find the individual chromosome in the resting reticulum, but SHARP claims, apparently with good reason, that the chromosomes in many cases can be identified even in the resting nucleus. Some of the stages leading up to the splitting of the chromosome have been misinterpreted by previous investigators and important stages have been overlooked. The telophasic vacuolization of the chromosome, now found by everyone, often gives the impression of a longitudinal splitting, and such a splitting is frequently described; sometimes the vacuolization results in the formation of short spirals. By schematizing features like these, it is easy to fall into error. Whether the vacuolization has resulted in the simulation of a split thread, or in a spiral, SHARP finds that in prophase a simple zigzag thread is formed which gradually straightens and by axial vacuolization becomes split into the future chromosomes. Thus the actual splitting is later than some have supposed. The vacuolization which appears in telophase has nothing to do with any splitting of chromosomes. There are no chromomeres and no continuous spirems either at prophase or telophase.

The paper is another strong argument in favor of the theory of the individuality of the chromosome.—CHARLES J. CHAMBERLAIN.

Phylogeny of Filicales.—In continuation of his studies of the phylogeny of ferns, BOWER[39] has investigated the monotypic tropical American genus *Metaxya*, which is better known as *Alsophila blechnoides*. Since this fern "has suffered vicissitudes of terminology," having been referred to *Polypodium*, *Aspidium*, *Alsophila*, and *Amphidesmium*, the suggestion was natural that it might be a synthetic type. BOWER concludes that the species deserves to represent a distinct genus, and that it is phyletically in a more primitive position than the true Cyatheae. He has also included with this study a general survey of other relatively primitive and related genera. In connection with this comparative study, BOWER has attempted to estimate the value of various characters for phyletic purposes; and especially "to see whether the position which the sorus holds relative to the margin of the sporophyll is not a more reliable feature, in ferns, at large, than it has commonly been held to be." The conclusion of the whole matter is that, "so far as the value of the general

[38] SHARP, LESTER W., Somatic chromosomes in *Vicia*. La Cellule **29**:297–322. *pls. 1, 2.* 1913.

[39] BOWER, F. O., Studies in the phylogeny of Filicales. III. On *Metaxya* and certain other relatively primitive ferns. Ann. Botany **27**:443–447. *pls. 32–34.* 1913.

phyletic characters of the ferns can be estimated, the criterion of position of the nascent sorus may be held to take precedence, in point of early origin and constancy, over any soral characters except the primal features of the sporangium itself, and over any anatomical characters of the axis derivative from the protostele." This is certainly an important conclusion, and in accordance with it, the leptosporangiate ferns (exclusive of the Osmundaceae) are grouped into two series: the "Superficiales," in which the origin of the sorus is constantly from the leaf-surface; and the "Marginales," in which it is as constantly from the margin.—J. M. C.

Morphology of Riccia.—Miss BLACK[40] in a recent study of *Riccia Frostii* Aust. finds that this species is strictly dioicous and that the sex organs are scattered irregularly in acropetal succession. From the standpoint of the arrangement of sex organs, this indicates that *R. Frostii* is more primitive than *R. natans*, in which the antheridia are clustered in a disk, and the archegonia, which appear later, are usually in two rows. From the standpoint of restriction of antheridia and archegonia to different individuals, an advance beyond *R. natans* is clearly indicated.

Miss BLACK agrees with Miss HIRSH,[41] who also studied *R. Frostii*, that the air chambers are not produced by splitting of cell walls at the angles of the cells, but by papillate outgrowth. Unfortunately, the figure given, as was the case in the work of Miss HIRSH, does not show the earliest stage in the development of the chamber, but can as easily be cited as proof that air chambers arise by splitting at the angles of the cells of the dorsal layer. The youngest air chamber shown is too old to settle the question either way, but a study of the relation of cells in the figure indicates that possibly the chamber may have arisen by splitting of the dorsal layer. This splitting need not originally occur within the tissues as some recent writers assume, but may, as DEUTSCH showed in *Targionia*, extend from the surface inward.

The rest of the investigation, which includes the development of sex organs, spermatogenesis, and sporogenesis, gives us nothing new.—W. J. G. LAND.

Peripheral leaf cells.—In many leafy liverworts there is a marked difference in form and markings of the peripheral cells of the leaf as compared with those farther away from the edge. GARJEANNE,[42] as the result of a study of 10 genera, finds that the thickening of the peripheral cells is stronger if the plant is exposed to conditions which give great variation of water content;

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[40] BLACK, CAROLINE A., The morphology of *Riccia Frostii* Aust. Ann. Botany **27**:511–532. *pls. 37, 38.* 1913.

[41] HIRSH, PAULINE E., The development of the air chambers of Ricciaceae. Bull. Torr. Bot. Club **27**:73–77. *figs. 6.* 1910.

[42] GARJEANNE, A. J. M., Die Randzellen einiger Jungermannienblätter. Flora **105**:370–384. 1913.